

CLAIMS

1. A rotary drum filter comprising:
 - (a) a drum mounted for rotation,
 - (b) a plurality of longitudinally extending division grids mounted and spaced in parallel relationship about the outer circumferential surface of the drum,
 - (c) a plurality of corrugated sheets each sheet having alternating ridges and channels extending from a leading edge to a trailing edge, the leading and trailing edges of each sheet mounted on adjacent pairs of division grids to define filtrate compartments around the circumference of the drum,
 - (d) drainage slots near the trailing edge of each channel for communication to said compartments,
 - (e) a plurality of perforated filter plates, each filter plate attached to the top of a corresponding corrugated sheet,
 - (f) a seal clip disposed at a leading edge of each corrugated sheet,
 - (g) a seal member disposed close to the underside leading edge of each corrugated sheet and engaged between the seal clip and the corrugated sheet, and
 - (h) shoulder portions on both longitudinal faces of each division grid adapted to slidably and replaceably mount respective leading and trailing edges of circumferentially adjacent corrugated sheets.
2. The rotary drum filter according to claim 1, wherein the sealing member comprises Teflon, ethylene-propylene rubber, Viton, Gore-Tex and/or another compressible material.

3. The rotary drum filter according to claim 1, wherein the seal clip and corrugated sheet are made from a material comprising a common material, austenitic stainless steels or combinations thereof.
4. The rotary drum filter according to claim 1, wherein the seal clip is a straight shape, J shape, reverse L shape or other shape that securely anchors the seal member.
5. The rotary drum filter according to claim 1, wherein each perforated filter plate has a leading edge that is set back from the leading edge of the corresponding corrugated sheet.
6. The rotary drum filter according to claim 5, wherein each perforated filter plate has a trailing edge that is set back from the trailing edge of said corrugated sheet.
7. The rotary drum filter according to claim 6 further comprising longitudinally extending cap strips that are removably fixed to the division grids so as to overlap the leading and trailing edges of the adjacent corrugated sheets.
8. The rotary drum filter according to claim 7, wherein the cap strips are perforated.
9. A filter deck assembly comprising:
 - (a) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,
 - (b) a perforated filter plate attached to the top of the corrugated sheet,

- (c) a seal clip disposed at a leading edge of the corrugated sheet, and
- (d) a seal member disposed close to the underside leading edge of each corrugated sheet and engaged between the seal clip and the corrugated sheet.

10. The filter deck assembly according to claim 9, wherein the seal member comprises Teflon, ethylene-propylene rubber, Viton, Gore-Tex and/or another compressible material.
11. The filter deck assembly according to claim 9, wherein the seal clip and corrugated sheet are made from a material comprising a common material, austenitic stainless steels or combinations thereof.
12. The filter deck assembly according to claim 9, wherein each perforated filter plate has a leading edge that is set back from the leading edge of the corresponding corrugated sheet.
13. The filter deck assembly according to claim 12, wherein each perforated filter plate has a trailing edge that is set back from the trailing edge of said corrugated sheet.
14. The filter deck assembly according to claim 13 further comprising at least one longitudinally extending cap strip that can be removably fixed to a division grid in a rotary drum filter so as to overlap the leading and trailing edges of the adjacent corrugated sheets.
15. The filter deck assembly according to claim 14, wherein the cap strip is perforated.

16. A method of filtering or washing pulp slurries comprising:
 - (a) placing a pulp slurry in a tank with a rotary drum filter,
 - (b) using the rotary drum filter to filter or wash the pulp slurry, wherein the rotary drum filter has at least one filter deck assembly comprising:
 - (1) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,
 - (2) a perforated filter plate attached to the top of the corrugated sheet,
 - (3) a seal clip disposed at a leading edge of the corrugated sheet, and
 - (4) a seal member disposed close to the underside leading edge of each corrugated sheet and engaged between the seal clip and the corrugated sheet.
17. The method of filtering or washing pulp slurries according to claim 16, wherein the filter deck assembly further comprises at least one longitudinally extending cap strip that can be removably fixed to a division grid in the rotary drum filter so as to overlap a leading edge and a trailing edge of the corrugated sheet.
18. The method of filtering or washing pulp slurries according to claim 17, wherein the cap strip is perforated.
19. A method of replacing a filter deck assembly comprising:
 - (a) removing a spent or broken filter deck assembly, and

- (b) replacing the spent or broken filter deck assembly with a new filter deck assembly comprising:
 - (1) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,
 - (2) a perforated filter plate attached to the top of the corrugated sheet,
 - (3) a seal clip disposed at a leading edge of the corrugated sheet, and
 - (4) a seal member disposed close to the underside leading edge of each corrugated sheet and engaged between the seal clip and the corrugated sheet.

20. The method of replacing a filter deck assembly according to claim 19 further comprising the use of perforated cap strips to retain the new filter deck assembly in the rotary drum filter.

21. A rotary drum filter comprising:

- (a) a drum mounted for rotation,
- (b) a plurality of longitudinally extending division grids mounted and spaced in parallel relationship about the outer circumferential surface of the drum,
- (c) a plurality of corrugated sheets each sheet having alternating ridges and channels extending from a leading edge to a trailing edge, the leading and trailing edges of each sheet mounted on adjacent pairs of division grids to define filtrate compartments around the circumference of the drum,

- (d) drainage slots near the trailing edge of each channel for communication to said compartments,
- (e) a plurality of perforated filter plates, each filter plate attached to the top of a corresponding corrugated sheet,
- (f) a seal clip disposed under and in front of a leading edge of each corrugated sheet,
- (g) a seal member disposed under and/or in front of the leading edge of the corrugated sheet and held in place by the seal clip, and
- (h) shoulder portions on both longitudinal faces of each division grid adapted to slidably and replaceably mount respective leading and trailing edges of circumferentially adjacent corrugated sheets.

22. The rotary drum filter according to claim 21, wherein the sealing member comprises Teflon, ethylene-propylene rubber, Viton, Gore-Tex and/or another compressible material.

23. The rotary drum filter according to claim 21, wherein the seal clip and corrugated sheet are made from a material comprising a common material, austenitic stainless steels or combinations thereof.

24. The rotary drum filter according to claim 21, wherein the seal clip is a J shape, elongated J shape, reverse L shape, elongated reverse L shape, or other shape that securely anchors the seal member.

25. The rotary drum filter according to claim 21, wherein each perforated filter plate has a leading edge that is set back from the leading edge of the corresponding corrugated sheet.

26. The rotary drum filter according to claim 25, wherein each perforated filter plate has a trailing edge that is set back from the trailing edge of said corrugated sheet.
27. The rotary drum filter according to claim 26 further comprising longitudinally extending cap strips that are removably fixed to the division grids so as to overlap the leading and trailing edges of the adjacent corrugated sheets.
28. The rotary drum filter according to claim 27, wherein the cap strips are perforated.
29. The rotary drum filter according to claim 21, wherein the seal member has a first piece and a second piece and wherein the first piece is under the leading edge of the corrugated sheet and the second piece is in front of the leading edge of the corrugated sheet.
30. A filter deck assembly comprising:
 - a) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,
 - b) a perforated filter plate attached to the top of the corrugated sheet,
 - c) a seal clip disposed under and in front of a leading edge of each corrugated sheet, and
 - d) a seal member disposed under and/or in front of the leading edge of the corrugated sheet and held in place by the seal clip.

31. The filter deck assembly according to claim 30, wherein the seal member comprises Teflon, ethylene-propylene rubber, Viton, Gore-Tex and/or another compressible material.
32. The filter deck assembly according to claim 30, wherein the seal clip and corrugated sheet are made from a material comprising a common material, austenitic stainless steels or combinations thereof.
33. The filter deck assembly according to claim 30, wherein each perforated filter plate has a leading edge that is set back from the leading edge of the corresponding corrugated sheet.
34. The filter deck assembly according to claim 33, wherein each perforated filter plate has a trailing edge that is set back from the trailing edge of said corrugated sheet.
35. The filter deck assembly according to claim 34 further comprising at least one longitudinally extending cap strip that can be removably fixed to a division grid in a rotary drum filter so as to overlap the leading and trailing edges of the adjacent corrugated sheets.
36. The filter deck assembly according to claim 35, wherein the cap strip is perforated.
37. The filter deck assembly according to claim 30, wherein the seal member has a first piece and a second piece and wherein the first piece is under the leading edge of the corrugated sheet and the second piece is in front of the leading edge of the corrugated sheet.
38. A method of filtering or washing pulp slurries comprising:

- (a) placing a pulp slurry in a tank with a rotary drum filter,
- (b) using the rotary drum filter to filter or wash the pulp slurry, wherein the rotary drum filter has at least one filter deck assembly comprising:
 - (1) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,
 - (2) a perforated filter plate attached to the top of the corrugated sheet,
 - (3) a seal clip disposed under and in front of a leading edge of each corrugated sheet, and
 - (4) a seal member disposed under and/or in front of the leading edge of the corrugated sheet and held in place by the seal clip.

39. The method of filtering or washing pulp slurries according to claim 38, wherein the filter deck assembly further comprises at least one longitudinally extending cap strip that can be removably fixed to a division grid in the rotary drum filter so as to overlap a leading edge and a trailing edge of the corrugated sheet.

40. The method of filtering or washing pulp slurries according to claim 39, wherein the cap strip is perforated.

41. A method of replacing a filter deck assembly comprising:

- (a) removing a spent or broken filter deck assembly, and
- (b) replacing the spent or broken filter deck assembly with a new filter deck assembly comprising:

- (1) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,
- (2) a perforated filter plate attached to the top of the corrugated sheet,
- (3) a seal clip disposed under and in front of a leading edge of each corrugated sheet, and
- (4) a seal member disposed under and/or in front of the leading edge of the corrugated sheet and held in place by the seal clip.

42. The method of replacing a filter deck assembly according to claim 41 further comprising the use of perforated cap strips to retain the new filter deck assembly in the rotary drum filter.

43. A filter deck assembly comprising:

- a) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,
- b) a perforated filter plate attached to the top of the corrugated sheet,
- c) a seal clip disposed solely in front of a leading edge of each corrugated sheet, and
- d) a seal member disposed in front of the leading edge of the corrugated sheet and held in place by the seal clip.

44. The filter deck assembly according to claim 43, wherein the seal member comprises Teflon, ethylene-propylene rubber, Viton, Gore-Tex and/or another compressible material.

45. The filter deck assembly according to claim 43, wherein the seal clip and corrugated sheet are made from a material comprising a common material, austenitic stainless steels or combinations thereof.
46. The filter deck assembly according to claim 43, wherein each perforated filter plate has a leading edge that is set back from the leading edge of the corresponding corrugated sheet.
47. The filter deck assembly according to claim 43, wherein each perforated filter plate has a trailing edge that is set back from the trailing edge of said corrugated sheet.
48. The filter deck assembly according to claim 47 further comprising at least one longitudinally extending cap strip that can be removably fixed to a division grid in a rotary drum filter so as to overlap the leading and trailing edges of the adjacent corrugated sheets.
49. The filter deck assembly according to claim 48, wherein the cap strip is perforated.
50. A method of filtering or washing pulp slurries comprising:
 - (c) placing a pulp slurry in a tank with a rotary drum filter,
 - (d) using the rotary drum filter to filter or wash the pulp slurry, wherein the rotary drum filter has at least one filter deck assembly comprising:
 - (1) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,

- (2) a perforated filter plate attached to the top of the corrugated sheet,
- (3) a seal clip disposed solely in front of a leading edge of each corrugated sheet, and
- (4) a seal member disposed in front of the leading edge of the corrugated sheet and held in place by the seal clip.

51. The method of filtering or washing pulp slurries according to claim 50, wherein the filter deck assembly further comprises at least one longitudinally extending cap strip that can be removably fixed to a division grid in the rotary drum filter so as to overlap a leading edge and a trailing edge of the corrugated sheet.

52. The method of filtering or washing pulp slurries according to claim 51, wherein the cap strip is perforated.

53. A method of replacing a filter deck assembly comprising:

- (c) removing a spent or broken filter deck assembly, and
- (d) replacing the spent or broken filter deck assembly with a new filter deck assembly comprising:
 - (1) a corrugated sheet having alternating ridges and channels extending from a leading edge to a trailing edge, and having drainage slots near the trailing edge of each channel,
 - (2) a perforated filter plate attached to the top of the corrugated sheet,
 - (3) a seal clip disposed solely in front of a leading edge of each corrugated sheet, and

(4) a seal member disposed in front of the leading edge of the corrugated sheet and held in place by the seal clip.

54. The method of replacing a filter deck assembly according to claim 53 further comprising the use of perforated cap strips to retain the new filter deck assembly in the rotary drum filter.